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Drowsy Driving

This report presents data regarding drowsy driving as it currently exists in NHTSA's databases. A drowsy driving crash is a crash in which the driver was reported as drowsy, sleepy, asleep, or fatigued.

Data

Drowsy driving was reportedly involved in 2.2 to 2.6 percent of total fatal crashes annually during the period 2005 through 2009, nationwide. In 2009, 2.5 percent (832) of the fatalities that occurred on U.S. roadways were reported to involve drowsy driving. Over the 5-year period, the *number* of fatalities has decreased slightly, but the *proportion* reported to involve drowsy driving remained relatively consistent, fluctuating between 2.3 and 2.7 percent. The year-to-year decrease in the number of drowsy-driving fatalities is at a similar rate of decrease as overall fatality figures. Table 1 shows data for fatal crashes and fatal crashes involving drowsy driving from 2005 through 2009.

The percentage of fatalities in crashes reported to involve drowsy driving varies by State. In 2009, it ranged from zero reported fatalities in one State to 9.4 percent of fatalities in another State, with a *median* value of 2.4 percent of the fatalities across the Nation.

As compared to the fatal crash data, drowsy driving is somewhat less prevalent in property-damage-only crashes and crashes of all severities, generally constituting 1.0 to 1.1 percent and 1.3 to 1.5 percent of each of these, respectively. The percentage of all severity crashes that are drowsy-driving crashes is dominated by property-damage-only crashes, since these make up about 70 percent of the total crashes. Over each of the years 2005 to 2009, injury crashes involving drowsy driving have constituted 2.0 to 2.3 percent of the overall injury crashes.

As shown in Table 2, an estimated 30,000 injury crashes with reports of drowsy drivers occurred in 2009 (2.0% of all injury crashes in 2009). Of all police-reported crashes that occurred in 2009 (fatal, injury, and property damage), 1.3 percent involved reports of drowsy driving (72,000 of a total of 5.5 million crashes). Table 2 provides data for the 5 years 2005

Table 1. Fatal Crashes, Drivers, and Fatalities in Crashes Involving Drowsy Driving, by Year, 2005-2009

	Overall Fatal Crashes			Fatal Crashes Involving Drowsy Driving		
Year	Crashes	Drivers	Fatalities	Crashes	Drivers	Fatalities
2005	39,252	59,220	43,510	1,033 (2.6%)	1,034 (1.7%)	1,194 (2.7%)
2006	38,648	57,846	42,708	995 (2.6%)	995 (1.7%)	1,091 (2.6%)
2007	37,435	56,019	41,259	926 (2.5%)	926 (1.7%)	1,050 (2.5%)
2008	34,172	50,416	37,423	746 (2.2%)	747 (1.5%)	854 (2.3%)
2009	30,797	45,230	33,808	730 (2.4%)	730 (1.6%)	832 (2.5%)
2005-2009	180,304	268,731	198,708	4,430	4,432	5,021
5-Year Average	36,061	53,746	39,742	886 (2.5%)	886 (1.6%)	1,004 (2.5%)

Source: FARS 2005 - 2008 Final File; FARS 2009 Annual Report File

Table 2. Motor Vehicle Traffic Crashes and Crashes Involving Drowsy Driving, by Year, 2005-2009

Crash Year by Crash Severity		Overall Crashes	Crashes Involving Drowsy Driving
2005	Fatal	39,252	1,033 (2.6%)
	Injury	1,816,000	42,000 (2.3%)
	PDO	4,304,000	47,000 (1.1%)
	Total	6,159,000	91,000 (1.5%)
2006	Fatal	38,648	995 (2.6%)
	Injury	1,746,000	38,000 (2.2%)
	PDO	4,189,000	47,000 (1.1%)
	Total	5,973,000	86,000 (1.4%)
2007	Fatal	37,435	926 (2.5%)
	Injury	1,711,000	38,000 (2.2%)
	PDO	4,275,000	49,000 (1.1%)
	Total	6,024,000	88,000 (1.5%)
2008	Fatal	34,172	746 (2.2%)
	Injury	1,630,000	36,000 (2.2%)
	PDO	4,146,000	43,000 (1.0%)
	Total	5,811,000	79,000 (1.4%)
2009	Fatal	30,797	730 (2.4%)
	Injury	1,517,000	30,000 (2.0%)
	PDO	3,957,000	41,000 (1.0%)
	Total	5,505,000	72,000 (1.3%)
2005–2009	Fatal	180,304	4,430 (2.5%)
	Injury	8,421,000	184,000 (2.2%)
	PDO	20,871,000	227,000 (1.1%)
	Total	29,473,000	416,000 (1.4%)
5-Year Average	Fatal	36,061	886 (2.5%)
	Injury	1,684,000	37,000 (2.2%)
	PDO	4,174,000	45,000 (1.1%)
	Total	5,895,000	83,000 (1.4%)

Source: NCSA, FARS 2005-2008 (Final), 2009 ARF; GES 2005-2009;
PDO – Property Damage Only

to 2009 citing the overall number of crashes by crash severity and those that were reported to involve drowsy driving

Previous Data

- *Crashes and Fatalities Related to Driver Drowsiness/Fatigue* (Knipling & Wang, 1994) – Knipling and Wang conducted an analysis of FARS and GES data from 1989 to 1993 regarding fatigue and drowsiness. Based on GES data, an average of 40,000 non-fatal injuries annually were associated with 1989-93 police-reported driver drowsiness crashes (1.4%). Data from 1989-93 indicates that drowsiness/fatigue was cited as a factor in an annual average of 1,357 fatal crashes resulting in 1,544 fatalities. This represents approximately 3.6 percent of all fatal crashes and 3.6 percent of fatalities during those 5 years.

- *National Motor Vehicle Crash Causation Survey (NMVCCS)* – NMVCCS consists of post-crash survey data from a nationally representative sample of tow-away crashes. Fatigue and sleeping were identified in two variables during the survey. For those cases in which the critical reason for the critical pre-crash event (first fatigue-related variable) was attributed to the driver, 3.2 percent involved the driver being sleepy or actually sleeping at the time of the crash. Crash associated factors were also determined including one question asking whether or not the driver was fatigued. Seven percent of the drivers of the case vehicles were fatigued and 68 percent were not fatigued.

Methodology

Data sources available to analyze drowsy driving include NHTSA's Fatality Analysis Reporting System (FARS) and National Automotive Sampling System (NASS) General Estimates System (GES). FARS is a census of all fatal crashes that occur on the Nation's roadways. NASS GES contains data from a nationally representative sample of police-reported crashes, including those that result in fatality, injury, or property damage. Data presented from NASS GES are estimates and are used to describe crashes of all severities. FARS and GES variable attributes were reviewed to determine the appropriate search criteria for each database that would define drowsy driving.

The variable names, with their associated attributes, are shown in Table 3. If none of these are noted for a particular crash, then the crash is determined to not involve drowsy driving.

Table 3. FARS and GES Codes Retrieved for Drowsy Driving

Database	Variable Name	Attribute
FARS	Related Factor – Driver Level	Drowsy, sleepy, asleep, fatigued
GES	Driver Distracted By	Sleepy or fell asleep
	Person's Physical Impairment	Drowsy, sleepy, asleep, fatigued

Limitations

There are inherent limitations to FARS and GES data with respect to determining the presence of drowsy driving. The data for FARS and GES are based on police accident reports (PARs) and investigations which are conducted *after* the event has occurred. These codes that identify drowsy driving involvement in FARS and GES are factors that may have played a role in the crash, as reported by law enforcement.

- PARs vary across jurisdiction, as do reporting practices for citing driver drowsiness on the PAR, both within States as well as between them. The Model Minimum Uniform Crash Criteria guidelines recommend fatigue be coded as a physical condition of the driver. Some States, however, include fatigue as an attribute of distraction.
  - Prior to the FARS/GES consolidation in 2009/2010, drowsy/sleepy/asleep/fatigued was coded as an attribute in the variable "Related Factor – Driver Level" for FARS. Starting with the 2010 data, the FARS/GES consolidation has "asleep or fatigued" coded as an attribute in the driver-level variable "Condition at Time of Crash." No change has been made in the collection or reporting of the information, only in the retrieval of the data, which will begin with the 2010 FARS and GES data.
- Under-reporting of the occurrence of drowsy driving is most likely due to lack of firm evidence of such involvement since investigation is done after the crash; drivers unaware of the role that drowsiness played in the crash; drivers reluctant to disclose that they fell asleep or were tired; and fatality of the involved driver.
- Previous reports cite data limitations that include over-reporting due to greater social acceptance of fatigue over alcohol use, speeding, or inattention, or under-reporting from crashes involving "drift out of lane" that could actually be drowsy driving. GES involves only *police-reported* crashes, and fewer than one-half of all crashes are police-reported, thus potentially missing single-vehicle drowsy driving crashes with minor or no injuries.

References

Knipling, R., & Wang, J. (1994). *Crashes and fatalities related to driver drowsiness/fatigue.* Washington, DC: National Highway Traffic Safety Administration.

NHTSA. (2008, July). *National Motor Vehicle Crash Causation Survey: Report to Congress.* DOT HS 811 059. Washington, DC: National Highway Traffic Safety Administration.

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